

WHAT IS CLAIMED IS:

1. A method of treating an animal containing a cell, said method comprising administering to said animal a polyamide nucleic acid oligomer under conditions wherein said oligomer enters
5 said cell and engenders a biological response in a sequence specific manner, said oligomer having sequence specificity for a target sequence within said cell while possessing at least one base pair mismatch with said target sequence.
2. The method of claim 1, wherein said oligomer comprises a sequence of SEQ ID NO:12.
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3. The method of claim 1, wherein said target sequence comprises at least a portion of a coding strand of DNA within said cell, wherein said portion regulates, or is a template for, synthesis of an RNA molecule.
- 15 4. The method of claim 1, wherein said target sequence comprises RNA that regulates expression of or encodes a polypeptide.
5. The method of claim 1, wherein said biological response is characterized by a physiological change in said animal.
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6. The method of claim 1, wherein said cell is a nervous system cell.

7. A method for identifying a mismatch polyamide nucleic acid oligomer that engenders a modulated biological response in a subject animal having a target sequence, said modulated biological response being in comparison to a biological response engendered by a reference polyamide nucleic acid oligomer, said method comprising:

5 a) obtaining reference information about said biological response engendered by said reference polyamide nucleic acid oligomer administered to a reference animal having said target sequence, said reference polyamide nucleic acid oligomer having sequence specificity for said target sequence,

10 b) determining test information about said biological response engendered by a test polyamide nucleic acid oligomer administered to said subject animal, wherein said reference and said test polyamide nucleic acid oligomers have different sequences, said test polyamide nucleic acid oligomer having sequence specificity for said target sequence while possessing at least one base pair mismatch with said target sequence, and

15 c) identifying said test polyamide nucleic acid oligomer as a mismatch polyamide nucleic acid oligomer if said test polyamide nucleic acid oligomer engenders said modulated response.

20 8. A kit for treating an animal containing a cell with a target sequence, said kit comprising a plurality of polyamide nucleic acid oligomers, wherein each of said oligomers has sequence specificity for said target sequence while possessing a sequence different from the sequence of the other oligomers.

9. The kit of claim 8, wherein one of said oligomers has a sequence completely complementary with said target sequence.

25 10. The kit of claim 8, wherein at least one of said oligomers has a sequence having at least one base pair mismatch with said target sequence.

11. The kit of claim 8, wherein said plurality of oligomers comprises a series of oligomers having incrementally increasing degrees of base pair mismatch with said target sequence.

12. A method for treating an animal containing a cell with a target sequence, said method comprising:

a) selecting a first polyamide nucleic acid oligomer from a kit, said kit comprising a plurality of polyamide nucleic acid oligomers, wherein each of said oligomers has sequence specificity for said target sequence while possessing a sequence different from the sequence of the other oligomers, and

b) administering said first selected oligomer to said animal under conditions wherein said first selected oligomer enters said cell and engenders a biological response in a sequence specific manner.

13. The method of claim 12, wherein said method further comprises:

a) selecting a second polyamide nucleic acid oligomer from said kit, and

b) administering said second selected oligomer to said animal under conditions wherein said second selected oligomer enters said cell and engenders said biological response to a modulated degree compared to the response engendered by said first selected oligomer.

14. An article of manufacture, comprising packaging material and a polyamide nucleic acid oligomer contained within said packaging material, wherein said packaging material comprises a label or package insert indicating that said oligomer can be administered to an animal under conditions wherein said oligomer engenders a biological response in a sequence specific manner, said oligomer having sequence specificity for a target sequence while possessing at least one base pair mismatch with said target sequence.